



National Aeronautics and Space Administration

5...4...3...2...1...

SPACE LAUNCH SYSTEM

A NEW CAPABILITY FOR SPACE EXPLORATION

Angie Jackman
Space Launch System

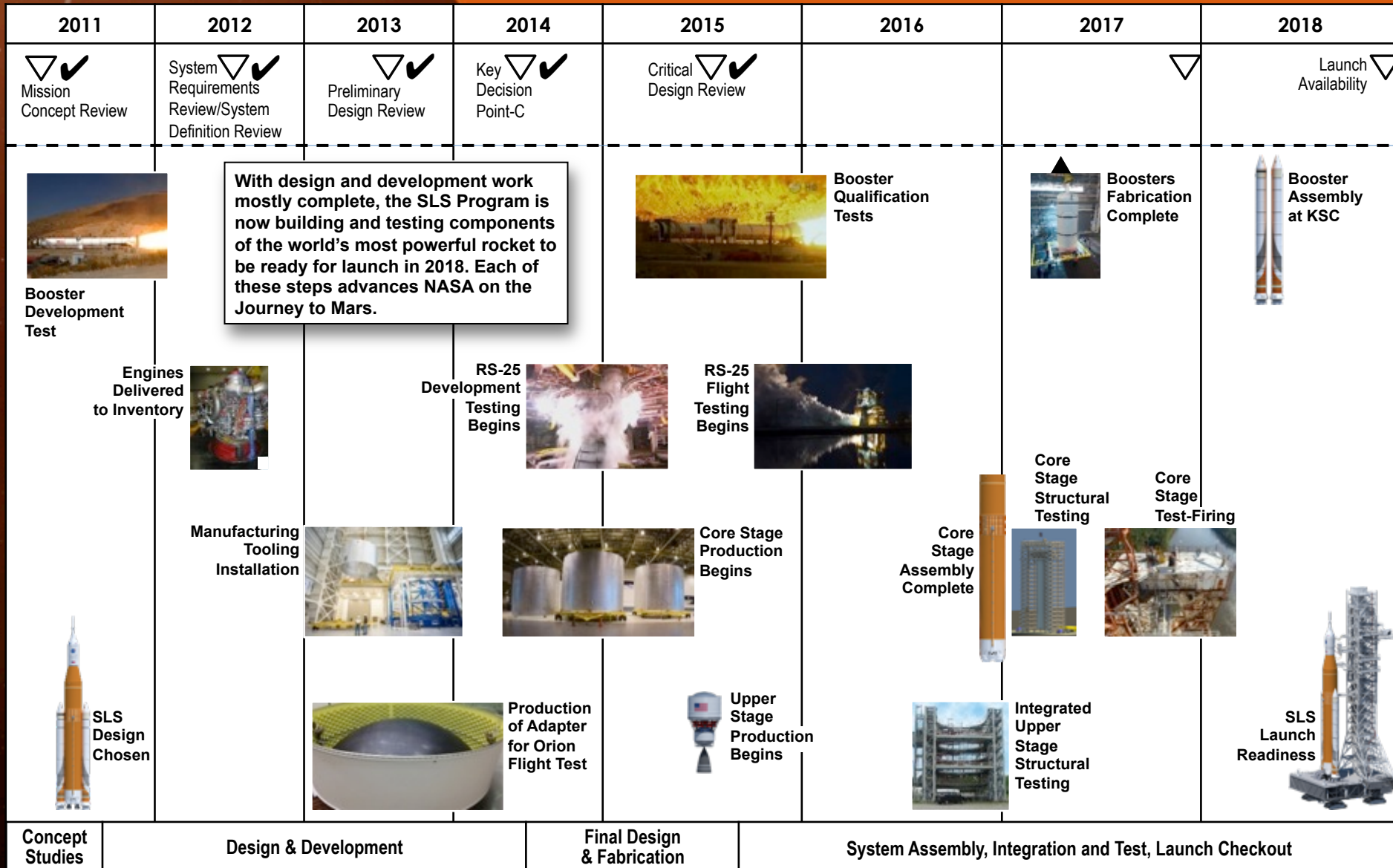
29 March 2016

angie.jackman@nasa.gov

nasa-slspayloads@mail.nasa.gov



Space Launch System Path to the Pad



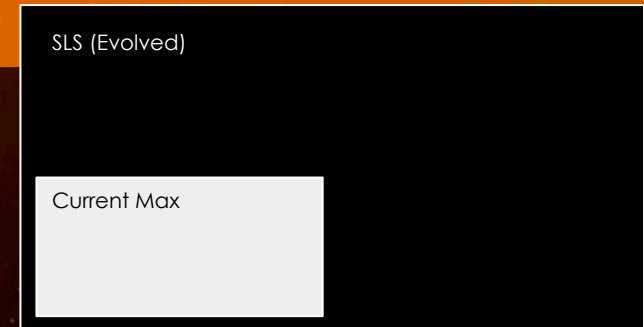
Recent Progress Toward Launch



Benefits of Space Launch System

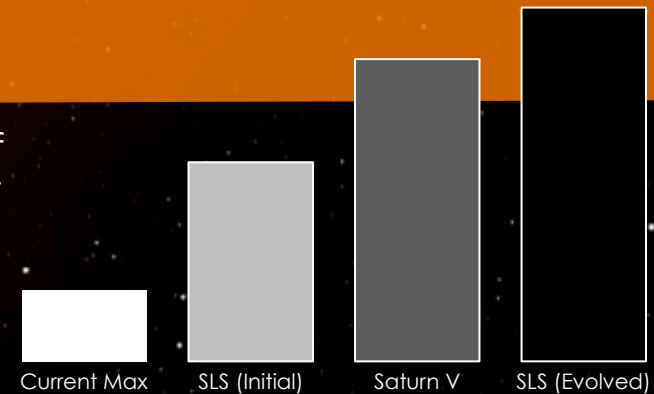
Volume

- Space Launch System will be able to offer payload accommodations with five times more volume than any contemporary launch vehicle.
- Payload fairings of up to 10-meter diameter are planned.



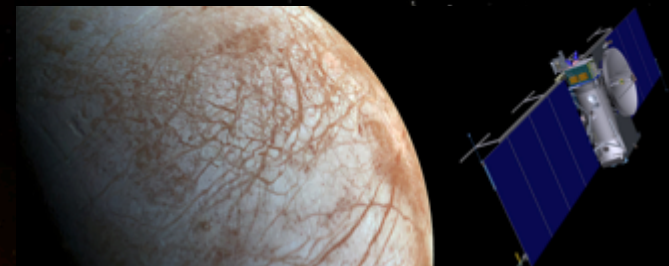
Mass

- Space Launch System will offer an initial capability of greater than 70 metric tons to low Earth orbit; current U.S. launch vehicle maximum is 28 t.
- Evolved version of SLS will offer greatest-ever capability of greater than 130 t to LEO.

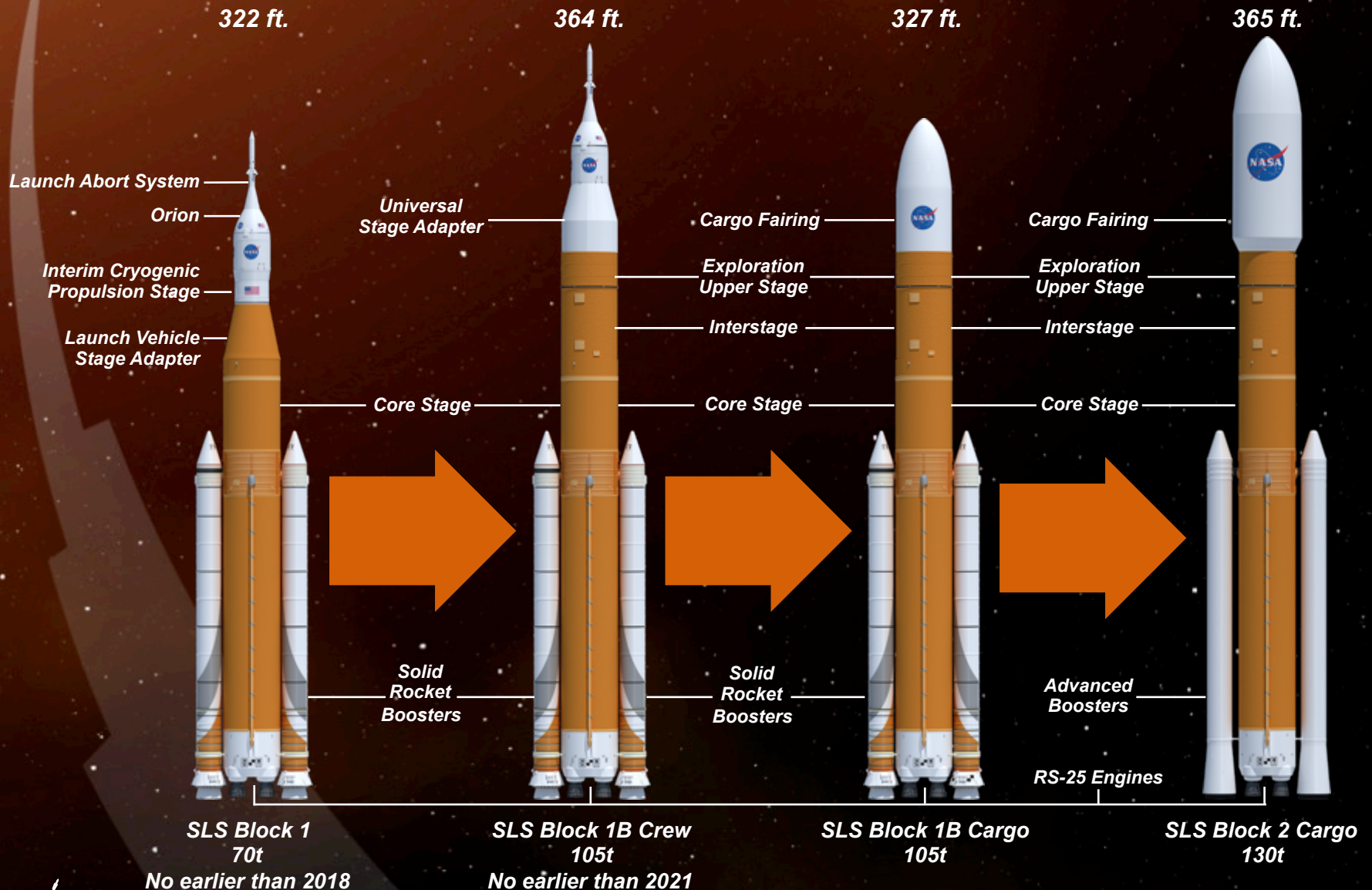


Departure Energy

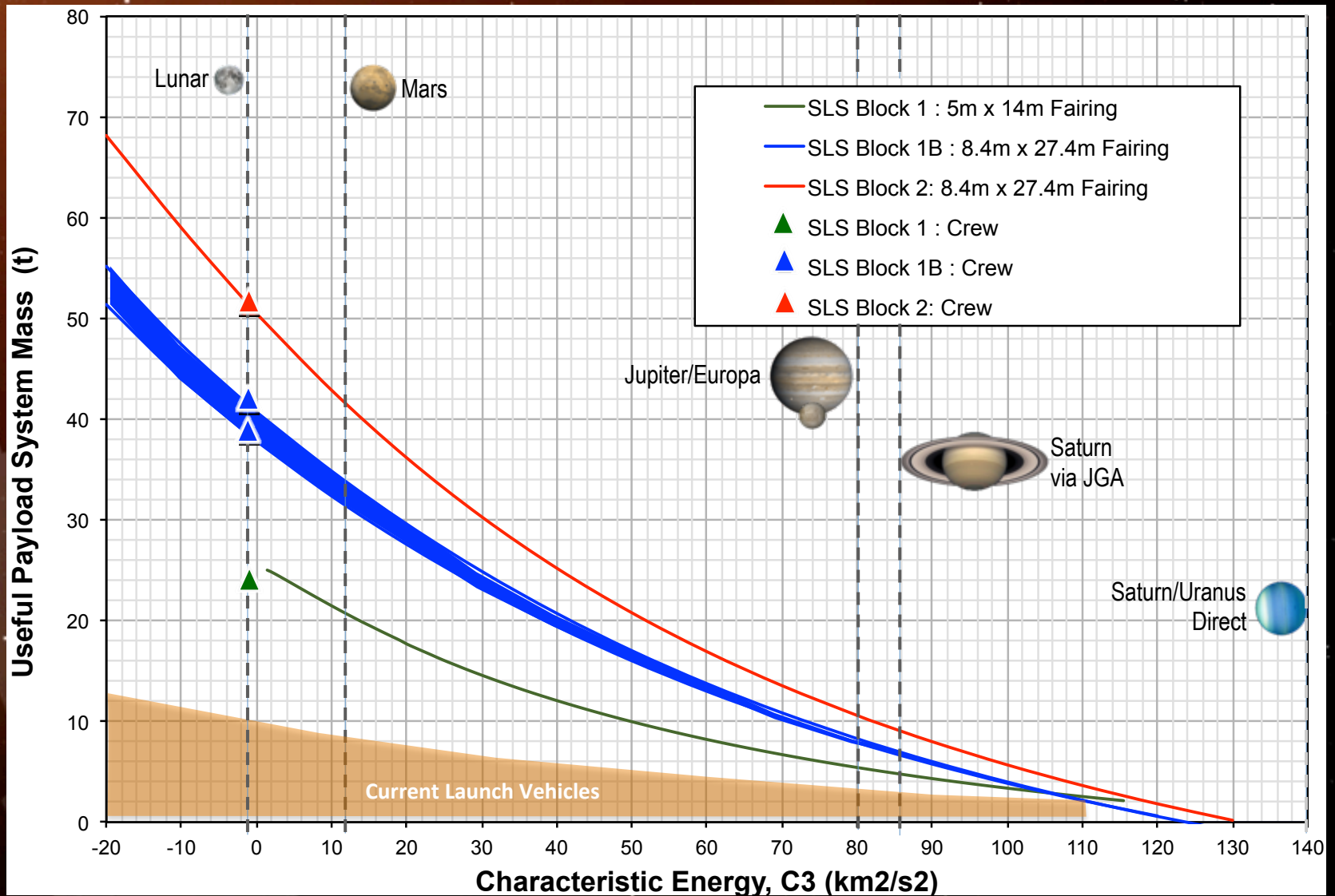
- SLS offers reduced transit times to the outer solar system by half or greater.
- Higher characteristic energy (C3) also enables larger payloads to destination.



SLS Evolution Overview



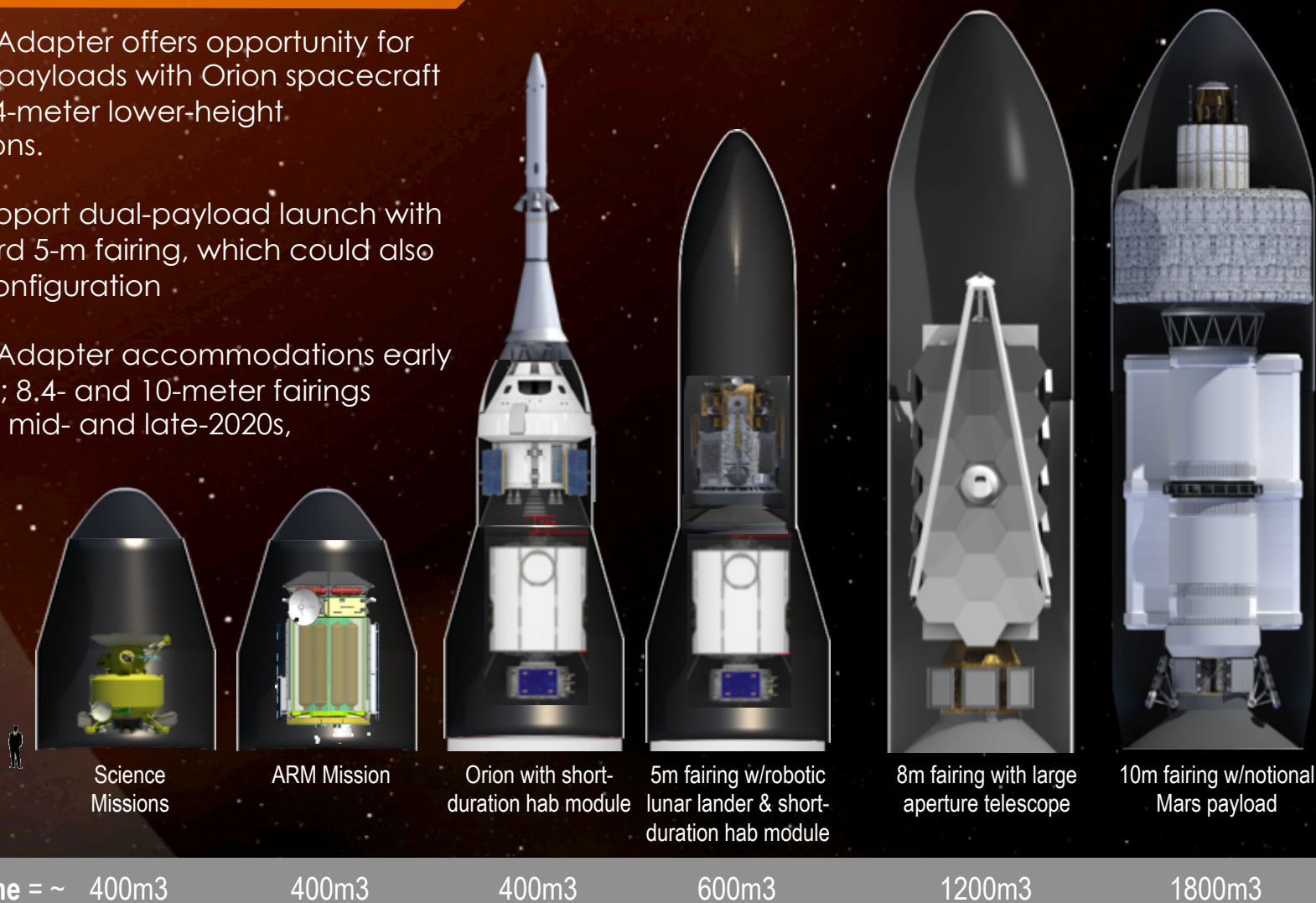
SLS Payload Mission Capture



SLS Payload Accommodations

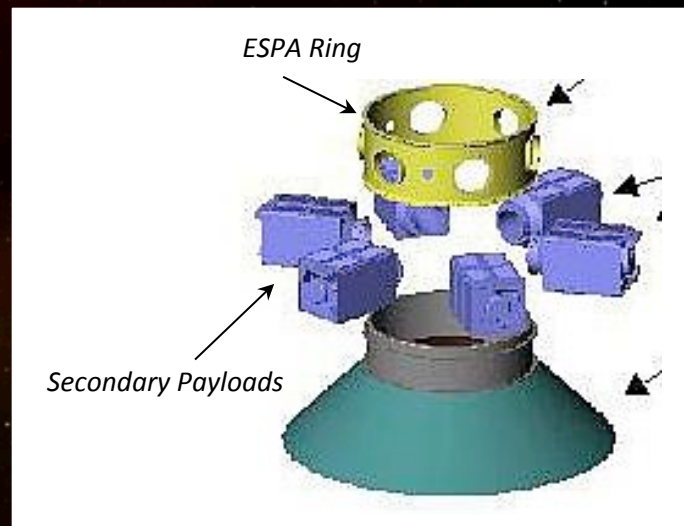
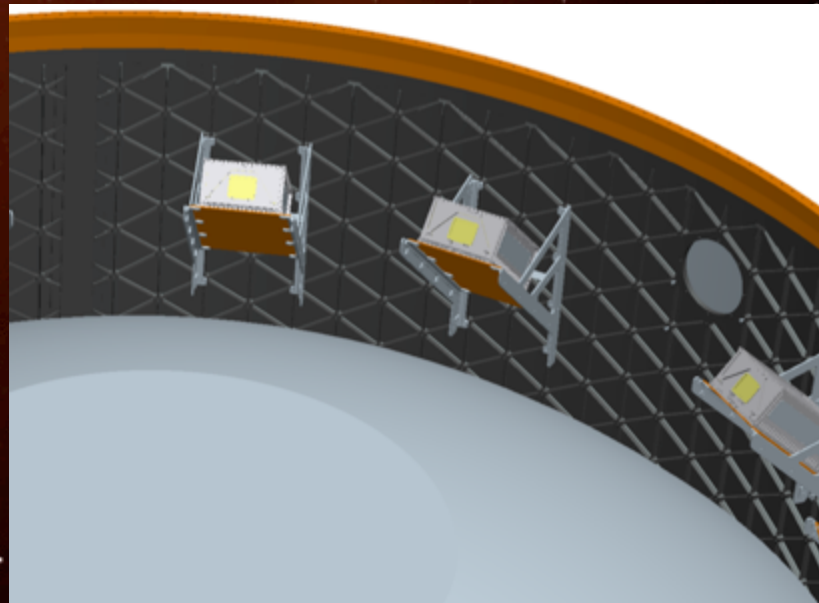
Fairing Availability

- ◆ Universal Stage Adapter offers opportunity for co-manifested payloads with Orion spacecraft or near-term 8.4-meter lower-height accommodations.
- ◆ USA can also support dual-payload launch with industry-standard 5-m fairing, which could also fly on Block 1 configuration
- ◆ Universal Stage Adapter accommodations early as soon as 2023; 8.4- and 10-meter fairings available in the mid- and late-2020s, respectively.



Secondary Payload Capability

- Block 1 vehicle offers at least thirteen 6U payload locations
- 6U volume/mass is the current standard (14 kg payload mass)
- Payloads will be “off” from roll-out through Orion separation and payload deployment
- Payload Deployment System Sequencer; payload deployment will begin with pre-loaded sequence following MPCV separation and ICPS disposal burn
- Payload requirements captured in Interface Definition and Requirements Document
 - Block 1B and 2 vehicles offer up to six larger, ESPA-class secondary payload (>180 kg) accommodations

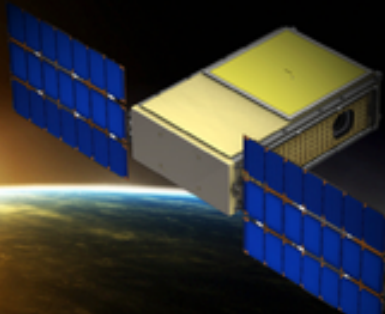


New Opportunities for SmallSats

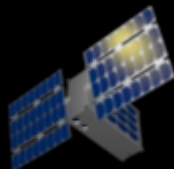
CuSP



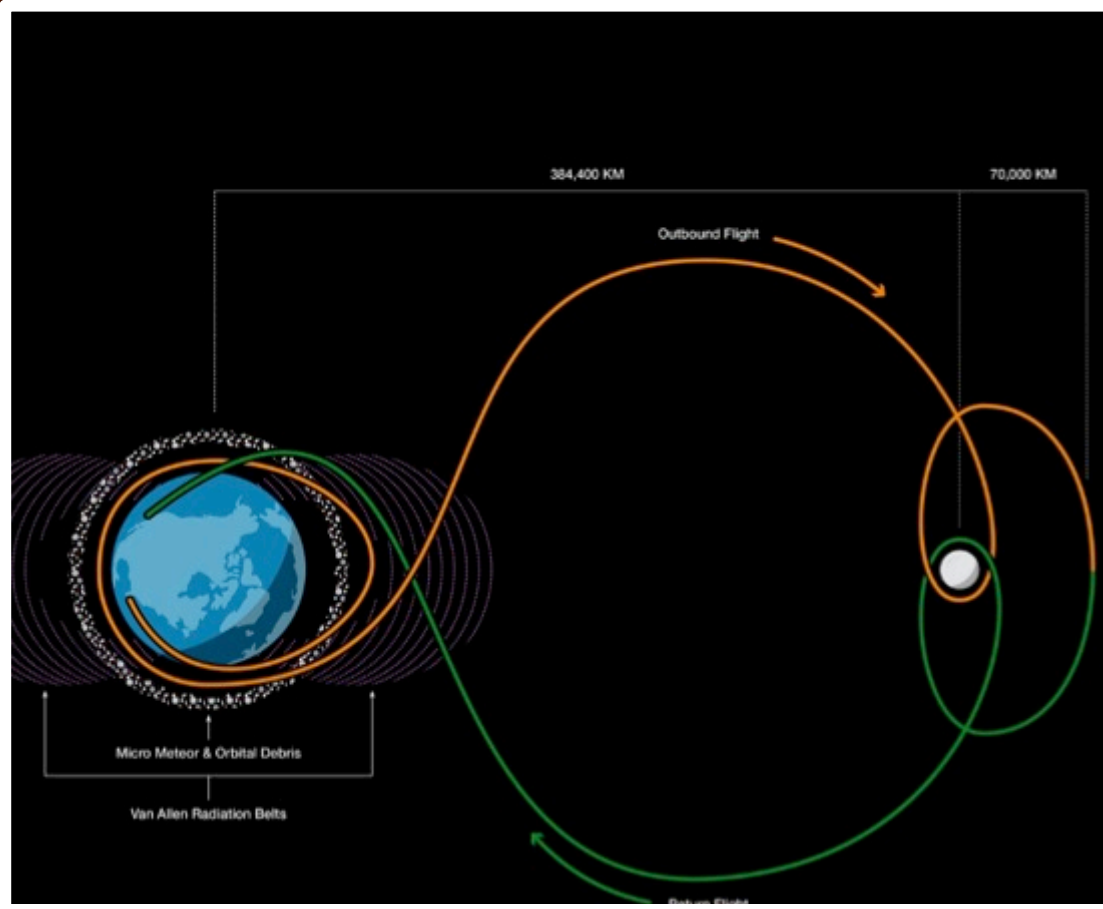
Biosentinel



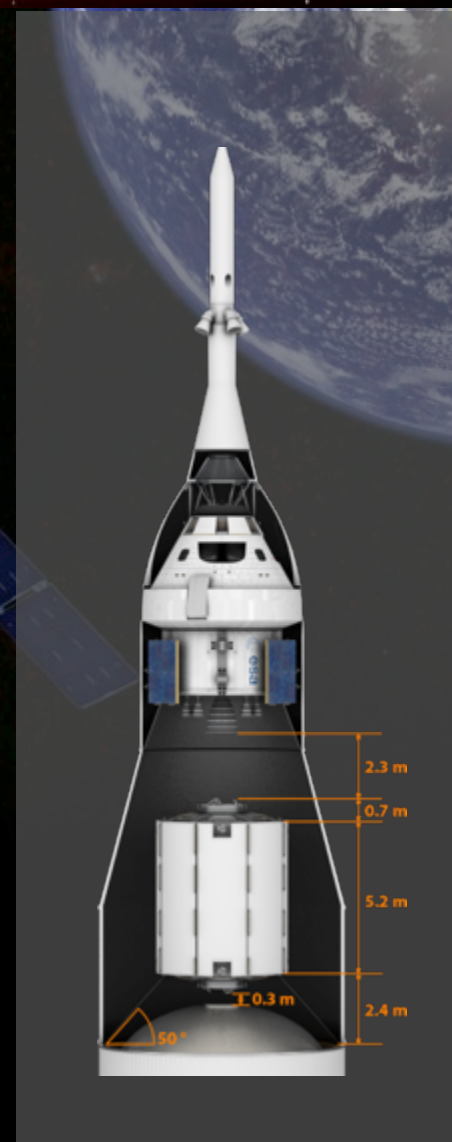
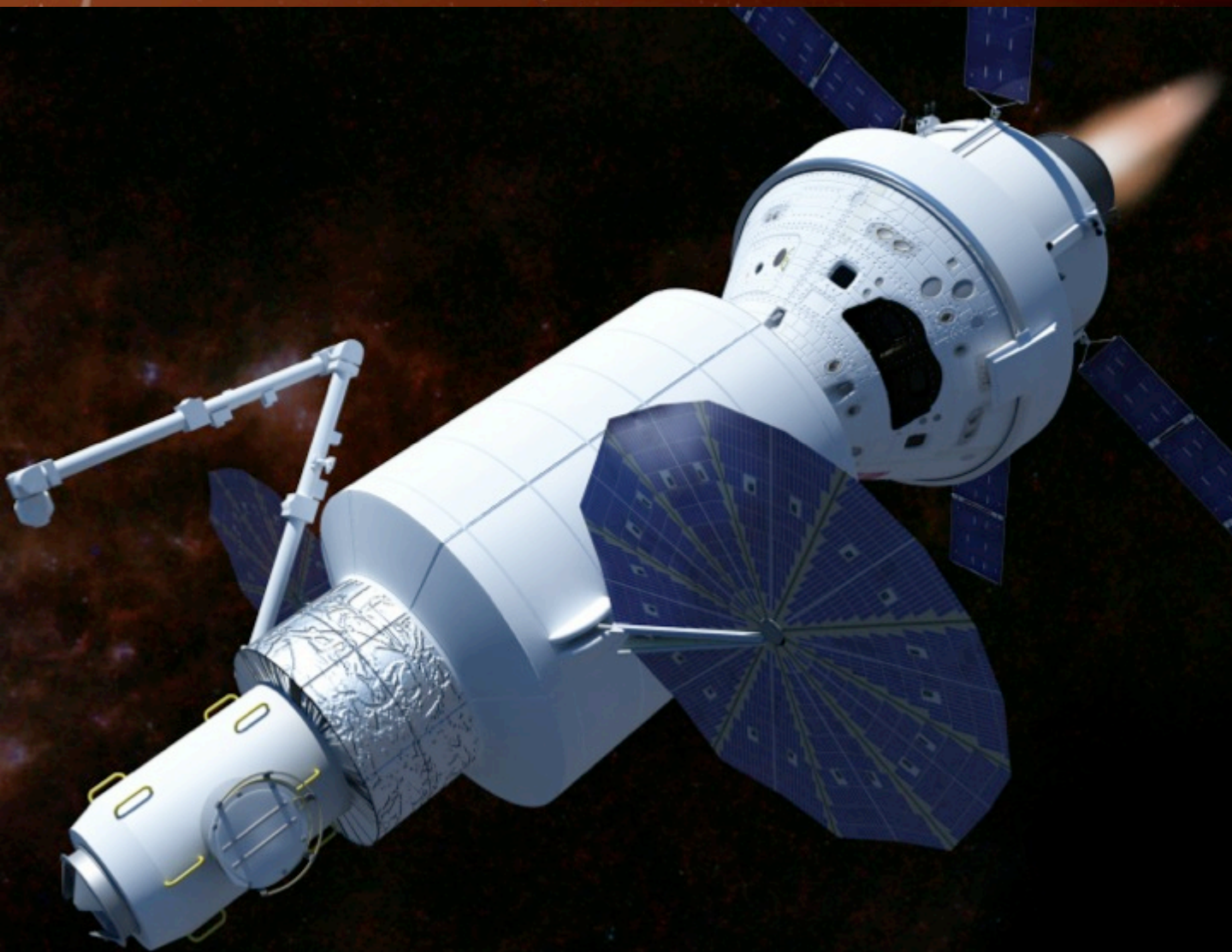
LunaH-Map



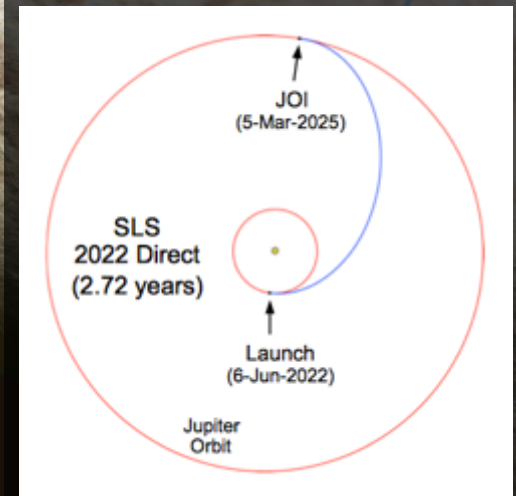
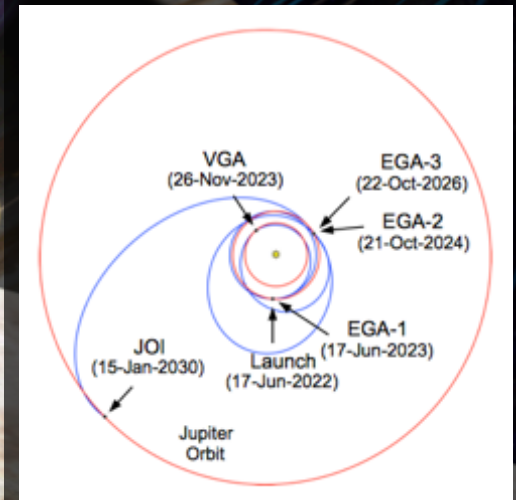
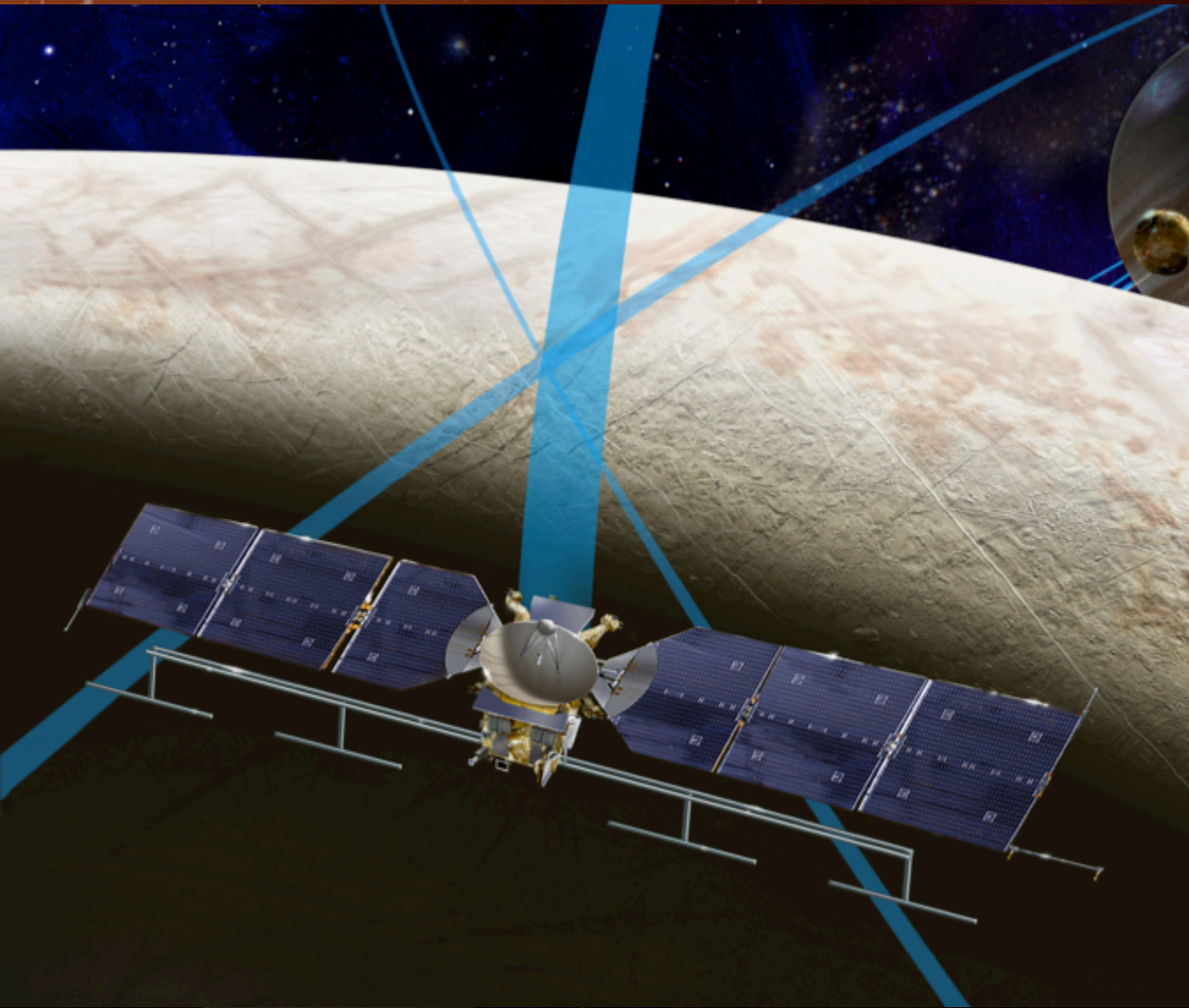
EM-1 Trajectory



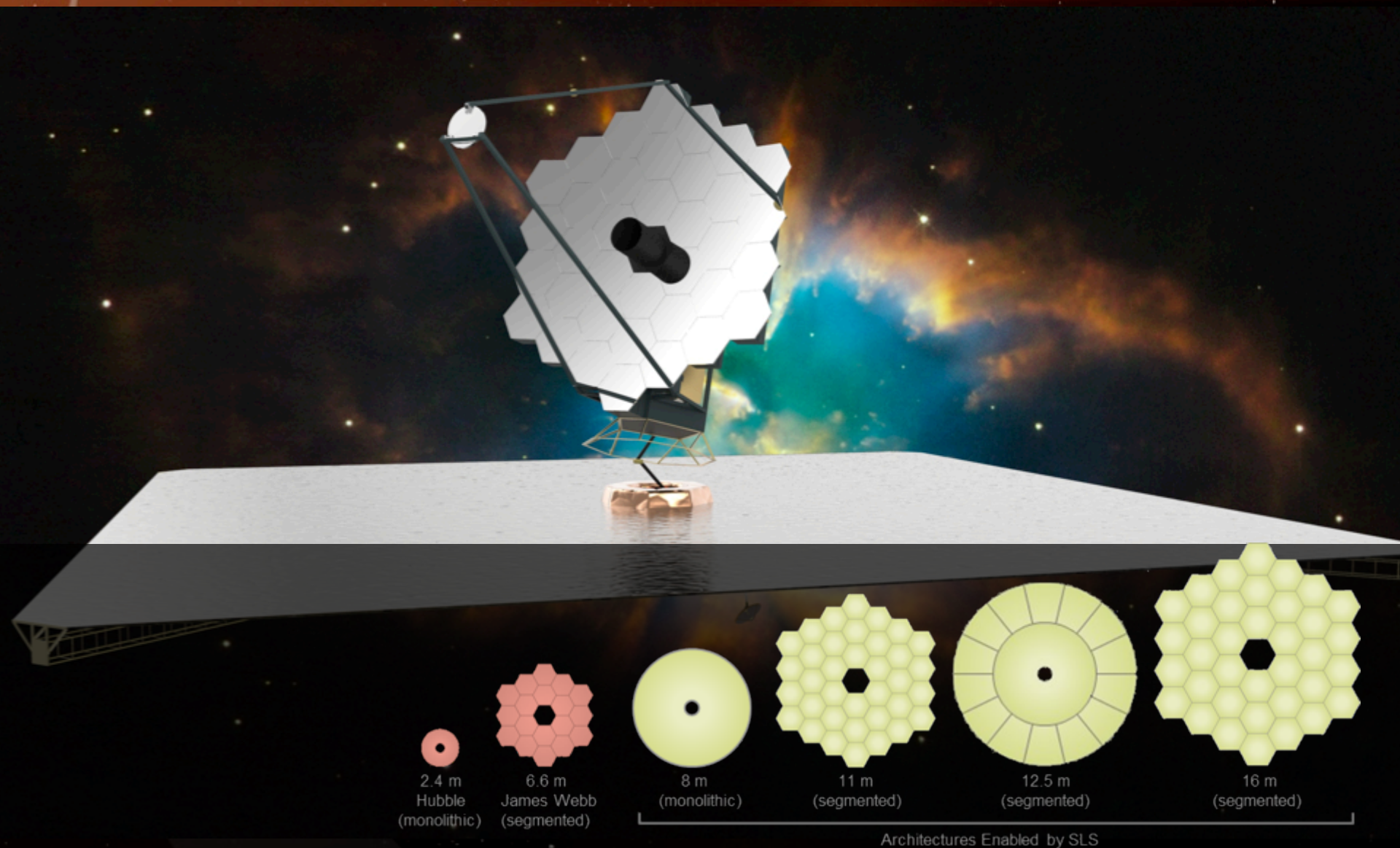
Utilization of SLS Mass Capabilities



Utilization of SLS Departure Energy



Utilization of SLS Volume



For More Information:
nasa-slspayloads@mail.nasa.gov



#JOURNEYTOMARS



www.nasa.gov



[@NASA_SLS](https://twitter.com/NASA_SLS)



[NASASLS](https://www.facebook.com/NASASLS)



[google.com/+nasa](https://plus.google.com/+nasa)



[youtube.com/nasa](https://www.youtube.com/nasa)



[@explorenasa](https://www.instagram.com/explore/nasa)

